WHAT IS CLAIMED IS:

1.   An image reading device comprising:

       infrared component forming means for forming an infrared component of an image of a document;

       infrared component detecting means for detecting an infrared component level of the infrared component for pixels of the image;

       defective infrared component detecting means for detecting a defective infrared component level of a defective pixel for which the detected infrared component level is less than a reference level;

       visible component forming means for forming a visible component of the image of the document;

       visible component detecting means for detecting a visible component level for the pixels of the image;

       correcting means for correcting the visible component level of the defective pixel to obtain a corrected visible component level for the defective pixel based on the reference level and the detected defective infrared component level for the defective pixel;

       visible image data obtaining means for outputting visible image data based on the detected visible component level of pixels other than the defective pixel and based on the corrected visible component level of the defective pixel; and

       reading condition determining means for determining a reading condition of the image of the document based on the visible image data.

2.   The image reading device of claim 1, further comprising:

       minimum brightness level detecting means for detecting a minimum brightness level of the visible image data;

       gradation conversion characteristic setting means for setting a gradation conversion characteristic with respect to the visible image data based on the detected minimum brightness level; and

       gradation characteristic conversion means for converting a gradation characteristic of the visible image data based on the set gradation conversion characteristic.

3.   The image reading device of claim 2, wherein the correcting means calculates the corrected visible component level by multiplying a detected visible component level of the defective pixel by a correction coefficient that is equal to the reference level divided by the defective infrared component level.

4.   The image reading device of claim 3, wherein the minimum brightness level detecting means detects the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

5.   The image reading device of claim 2, wherein the minimum brightness level detecting means detects the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

6.   The image reading device of claim 2, wherein:

the visible component forming means forms a plurality of visible wavelength components of the image;

the visible image data obtaining means outputs visible image data for each of the plurality of visible wavelength components;

the defective infrared component detecting means detects the defective pixel from the visible image data for each of the plurality of visible wavelength components;

the minimum brightness level detecting means detects the minimum brightness level of the visible image data for each of the plurality of visible wavelength components;

the gradation conversion characteristic setting means sets the gradation conversion characteristic for the visible image data for each of the plurality of visible wavelength components based on the minimum brightness level for each of the visible wavelength components; and

the gradation characteristic converting means converts the gradation characteristic of the visible image data for each of the plurality of visible wavelength components based on the set gradation conversion characteristic for each of the visible wavelength components.

7.   An image reading device comprising:

an illumination system that irradiates a document with visible light and infrared light;

an image detection system that detects an infrared component of an image of the document and a visible light component of the image of the document; and

a controller that:

determines an infrared component level for pixels of the infrared component of the image;

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detects a defective infrared component level of a defective pixel for which the determined infrared component level is less than a reference level;

determines a visible component level of the pixels of the visible light component of the image;

corrects the visible component level of the defective pixel to obtain a corrected visible component level for the defective pixel based on the reference level and the detected defective infrared component level for the defective pixel;

outputs visible image data based on the detected visible component level of pixels other than the defective pixel and based on the corrected visible component level of the defective pixel; and

determines a reading condition of the image of the document based on the visible image data.

8.   The image reading device of claim 7, wherein the controller:

determines a minimum brightness level of the visible image data;

sets a gradation conversion characteristic with respect to the visible image data based on the detected minimum brightness level; and

converts a gradation characteristic of the visible image data based on the set gradation conversion characteristic.

9.   The image reading device of claim 8, wherein the controller calculates the corrected visible component level by multiplying a detected visible component level of the defective pixel by a correction coefficient that is equal to the reference level divided by the defective infrared component level.

10.   The image reading device of claim 9, wherein the controller determines the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

11.   The image reading device of claim 8, wherein the controller determines the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

12.   A computer readable storage medium that stores a control program to control an image reading device having an illumination system that irradiates a document with visible light and infrared light, and an image detection system that detects an infrared component of

an image of the document and a visible light component of the image of the document, the control program comprising:

an infrared component procedure that determines an infrared component level for pixels of the infrared component of the image;

a defective infrared component detecting procedure that detects a defective infrared component level of a defective pixel for which the determined infrared component level is less than a reference level;

a visible component procedure that determines a visible component level of the pixels of the visible light component of the image;

a correcting procedure that corrects the visible component level of the defective pixel based on the reference level and the defective infrared component level to obtain a corrected visible component level;

a visible image data obtaining procedure that outputs visible image data according to the visible component level of pixels other than the defective pixel and the corrected visible component level of the defective pixel; and

a reading condition determining procedure that determines a reading condition of the image of the document based on the visible image data.

13. A computer data signal, embodied in a carrier wave, and representing a control program to control an image reading device having an illumination system that irradiates a document with visible light and infrared light, and an image detection system that detects an infrared component of an image of the document and a visible light component of the image of the document, the control program comprising:

an infrared component procedure that determines an infrared component level for pixels of the infrared component of the image;

a defective infrared component detecting procedure that detects a defective infrared component level of a defective pixel for which the determined infrared component level is less than a reference level;

a visible component procedure that determines a visible component level of the pixels of the visible light component of the image;

a correcting procedure that corrects the visible component level of the defective pixel based on the reference level and the defective infrared component level to obtain a corrected visible component level;

a visible image data obtaining procedure that outputs visible image data according to the visible component level of pixels other than the defective pixel and the corrected visible component level of the defective pixel; and

a reading condition determining procedure that determines a reading condition of the image of the document based on the visible image data.

14.   A method of controlling an image reading device that reads an image from a document, the method comprising the steps of:

forming an infrared component of the image of the document;

detecting an infrared component level of the infrared component for pixels of the image;

detecting a defective infrared component level of a defective pixel for which the detected infrared component level is less than a reference level;

forming a visible component of the image of the document;

detecting a visible component level for the pixels of the image;

correcting the visible component level of the defective pixel to obtain a corrected visible component level for the defective pixel based on the reference level and the detected defective infrared component level for the defective pixel;

outputting visible image data based on the detected visible component level of pixels other than the defective pixel and based on the corrected visible component level of the defective pixel; and

determining a reading condition of the image of the document based on the visible image data.

15.   The method of claim 14, further comprising:

detecting a minimum brightness level of the visible image data;

setting a gradation conversion characteristic with respect to the visible image data based on the detected minimum brightness level; and

converting a gradation characteristic of the visible image data based on the set gradation conversion characteristic.

16.   The method of claim 15, wherein the corrected visible component level is calculated by multiplying a detected visible component level of the defective pixel by a correction coefficient that is equal to the reference level divided by the defective infrared component level.

17.   The method of claim 16, wherein the minimum brightness level is detected while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

18.   The method of claim 15, wherein the minimum brightness level is detected while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

19.   The method of claim 15, wherein:

the visible component forming step forms a plurality of visible wavelength components of the image;

the visible image data obtaining step outputs visible image data for each of the plurality of visible wavelength components;

the defective infrared component detecting step detects the defective pixel from the visible image data for each of the plurality of visible wavelength components;

the minimum brightness level detecting step detects the minimum brightness level of the visible image data for each of the plurality of visible wavelength components;

the gradation conversion characteristic setting step sets the gradation conversion characteristic for the visible image data for each of the plurality of visible wavelength components based on the minimum brightness level for each of the visible wavelength components; and

the gradation characteristic converting step converts the gradation characteristic of the visible image data for each of the plurality of visible wavelength components based on the set gradation conversion characteristic for each of the visible wavelength components.

20.   An image reading device comprising:

infrared component forming means for forming an infrared component of an image of a document;

infrared component detecting means for detecting an infrared component level of the infrared component for pixels of the image;

defective infrared component detecting means for detecting a defective infrared component level of a defective pixel for which the detected infrared component level is less than a reference level;

visible component forming means for forming a visible component of the image of the document;

visible component detecting means for detecting a visible component level for the pixels of the image;

correcting means for correcting the visible component level of the defective pixel to obtain a corrected visible component level for the defective pixel based on the reference level and the detected defective infrared component level for the defective pixel;

visible image data obtaining means for outputting visible image data based on the detected visible component level of pixels other than the defective pixel or based on the corrected visible component level of the defective pixel; and

reading condition determining means for determining a reading condition of the image of the document based on the visible image data.

21.   The image reading device of claim 20, further comprising:

minimum brightness level detecting means for detecting a minimum brightness level of the visible image data;

gradation conversion characteristic setting means for setting a gradation conversion characteristic with respect to the visible image data based on the detected minimum brightness level; and

gradation characteristic conversion means for converting a gradation characteristic of the visible image data based on the set gradation conversion characteristic.

22.   The image reading device of claim 21, wherein the correcting means calculates the corrected visible component level by multiplying a detected visible component level of the defective pixel by a correction coefficient that is equal to the reference level divided by the defective infrared component level.

23.   The image reading device of claim 22, wherein the minimum brightness level detecting means detects the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

24.   The image reading device of claim 21, wherein the minimum brightness level detecting means detects the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

25.   The image reading device of claim 21, wherein:

the visible component forming means forms a plurality of visible wavelength components of the image;

the visible image data obtaining means outputs visible image data for each of the plurality of visible wavelength components;

the defective infrared component detecting means detects the defective pixel from the visible image data for each of the plurality of visible wavelength components;

the minimum brightness level detecting means detects the minimum brightness level of the visible image data for each of the plurality of visible wavelength components;

the gradation conversion characteristic setting means sets the gradation conversion characteristic for the visible image data for each of the plurality of visible wavelength components based on the minimum brightness level for each of the visible wavelength components; and

the gradation characteristic converting means converts the gradation characteristic of the visible image data for each of the plurality of visible wavelength components based on the set gradation conversion characteristic for each of the visible wavelength components.

26.   An image reading device comprising:

an illumination system that irradiates a document with visible light and infrared light;

an image detection system that detects an infrared component of an image of the document and a visible light component of the image of the document; and

a controller that:

determines an infrared component level for pixels of the infrared component of the image;

detects a defective infrared component level of a defective pixel for which the determined infrared component level is less than a reference level;

determines a visible component level of the pixels of the visible light component of the image;

corrects the visible component level of the defective pixel to obtain a corrected visible component level for the defective pixel based on the reference level and the detected defective infrared component level for the defective pixel;

outputs visible image data based on the detected visible component level of pixels other than the defective pixel or based on the corrected visible component level of the defective pixel; and

determines a reading condition of the image of the document based on the visible image data.

27. The image reading device of claim 26, wherein the controller:

determines a minimum brightness level of the visible image data;

sets a gradation conversion characteristic with respect to the visible image data based on the detected minimum brightness level; and

converts a gradation characteristic of the visible image data based on the set gradation conversion characteristic.

28. The image reading device of claim 27, wherein the controller calculates the corrected visible component level by multiplying a detected visible component level of the defective pixel by a correction coefficient that is equal to the reference level divided by the defective infrared component level.

29. The image reading device of claim 28, wherein the controller determines the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

30. The image reading device of claim 27, wherein the controller determines the minimum brightness level while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

31. A computer readable storage medium that stores a control program to control an image reading device having an illumination system that irradiates a document with visible light and infrared light, and an image detection system that detects an infrared component of an image of the document and a visible light component of the image of the document, the control program comprising:

an infrared component procedure that determines an infrared component level for pixels of the infrared component of the image;

a defective infrared component detecting procedure that detects a defective infrared component level of a defective pixel for which the determined infrared component level is less than a reference level;

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a visible component procedure that determines a visible component level of the pixels of the visible light component of the image;

a correcting procedure that corrects the visible component level of the defective pixel based on the reference level and the defective infrared component level to obtain a corrected visible component level;

a visible image data obtaining procedure that outputs visible image data according to the visible component level of pixels other than the defective pixel or according to the corrected visible component level of the defective pixel; and

a reading condition determining procedure that determines a reading condition of the image of the document based on the visible image data.

32.   A computer data signal, embodied in a carrier wave, and representing a control program to control an image reading device having an illumination system that irradiates a document with visible light and infrared light, and an image detection system that detects an infrared component of an image of the document and a visible light component of the image of the document, the control program comprising:

an infrared component procedure that determines an infrared component level for pixels of the infrared component of the image;

a defective infrared component detecting procedure that detects a defective infrared component level of a defective pixel for which the determined infrared component level is less than a reference level;

a visible component procedure that determines a visible component level of the pixels of the visible light component of the image;

a correcting procedure that corrects the visible component level of the defective pixel based on the reference level and the defective infrared component level to obtain a corrected visible component level;

a visible image data obtaining procedure that outputs visible image data according to the visible component level of pixels other than the defective pixel or according to the corrected visible component level of the defective pixel; and

a reading condition determining procedure that determines a reading condition of the image of the document based on the visible image data.

33.   A method of controlling an image reading device that reads an image from a document, the method comprising the steps of:

forming an infrared component of the image of the document;

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detecting an infrared component level of the infrared component for pixels of the image;

detecting a defective infrared component level of a defective pixel for which the detected infrared component level is less than a reference level;

forming a visible component of the image of the document;

detecting a visible component level for the pixels of the image;

correcting the visible component level of the defective pixel to obtain a corrected visible component level for the defective pixel based on the reference level and the detected defective infrared component level for the defective pixel;

outputting visible image data based on the detected visible component level of pixels other than the defective pixel or based on the corrected visible component level of the defective pixel; and

determining a reading condition of the image of the document based on the visible image data.

34.   The method of claim 33, further comprising:

detecting a minimum brightness level of the visible image data;

setting a gradation conversion characteristic with respect to the visible image data based on the detected minimum brightness level; and

converting a gradation characteristic of the visible image data based on the set gradation conversion characteristic.

35.   The method of claim 34, wherein the corrected visible component level is calculated by multiplying a detected visible component level of the defective pixel by a correction coefficient that is equal to the reference level divided by the defective infrared component level.

36.   The method of claim 35, wherein the minimum brightness level is detected while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

37.   The method of claim 34, wherein the minimum brightness level is detected while excluding the detected visible component level of the defective pixel in which the detected infrared component level is less than a predetermined level that is lower than the reference level.

38.   The method of claim 34, wherein:

the visible component forming step forms a plurality of visible wavelength components of the image;

the visible image data obtaining step outputs visible image data for each of the plurality of visible wavelength components;

the defective infrared component detecting step detects the defective pixel from the visible image data for each of the plurality of visible wavelength components;

the minimum brightness level detecting step detects the minimum brightness level of the visible image data for each of the plurality of visible wavelength components;

the gradation conversion characteristic setting step sets the gradation conversion characteristic for the visible image data for each of the plurality of visible wavelength components based on the minimum brightness level for each of the visible wavelength components; and

the gradation characteristic converting step converts the gradation characteristic of the visible image data for each of the plurality of visible wavelength components based on the set gradation conversion characteristic for each of the visible wavelength components.